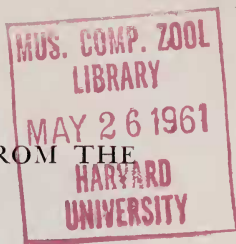


ART. 1. NEW AND LITTLE KNOWN *PHYSA* FROM THE
PALEOCENE OF PATAGONIA

By JUAN J. PARODIZ
Curator of Invertebrates
Carnegie Museum



Physa wichmanni, sp. nov. (Fig. 1, 1-6.)

Shell medium-sized, subrimate, elongate-ovate. Widest diameter scarcely exceeding a half of the total length (ratio 1.95). $6\frac{1}{2}$ whorls. Last whorl occupying almost $\frac{3}{4}$ of the length (ratio 1.26). Suture not margined but well marked, with inclination of 23° . On the last whorl, the surface shows rather strong and very regular growth lines. It also presents a dark-banded zone as occurs in some living species. Aperture elongated, rounded at the base, with columellar margin straight, and a little expanded. The interior of the shell is filled with tuffaceous matrix.

Except for a small broken portion of the peristome, the holotype is very well preserved, with the tip of the protoconch complete and partly crystallized by infiltration of silica solution. The dimensions are given in Table 1.

Holotype. Bajo Santa Rosa, 50 miles south of Negro River at Chelforo, province of Rio Negro, Argentina, from beds of the Jahuel Formation (Danian); collector Dr. R. Wichmann 1915. Two other specimens are from the same stratum, of Nahuel Niyeu, a southern locality near Valcheta; one of these is smaller, with the columellar lip submargined, and surface with strong and regularly spaced, costulae-like, lines of growth; the other, larger, is flattened and distorted by pressure of the sediments, a condition common to many fresh-water shells found in the same formation.

From the same region and beds, another but very different species was previously described:

Physa doeringi Doello Jurado 1927. (Fig. 1, 7-8.)

Boletin Academia Nacional de Ciencias en Córdoba, v. 30, p. 411, plate 11, fig. 76. (The figure referred to in the description, and included in the reprint of the paper, actually corresponds to a preceding paper in the same volume, p. 385, by R. Wichmann.)

This is a gigantic and very inflated form, with only five whorls, more than twice as large as *wichmanni*, and with shorter spire in relation to its diameter. The type locality is Trapalcó, in the Bajo de los Menucos, a southwestern continuation of the depression of Santa Rosa, and another specimen was collected also by Dr. Wichmann in the same type locality of our *Physa wichmanni*. Both species were also found at Nahuel Niyeu.

Doello Jurado mentioned young specimens of *doeringi*, but with them were mixed those of *wichmanni* above described. Another specimen from Santa Rosa is even larger than the type of *doeringi*.

The general shape of *P. doeringi*, recalls the African *Physopsis* of the *Planorbidae* which according to Connolly also reaches very large sizes. The differences are mainly anatomical, and for paleogeographical reasons which made such relationship very unlikely, there is less risk in maintaining the Patagonian species from the paleocene in *Physa*, s.s.

As both species occur in the same localities, Doello Jurado was inclined to assume that the specimens here described as *wichmanni* were *doeringi* not fully developed. But the differences are obvious as shown in the illustrations and the measurements in Table 1.

TABLE 1. *P. WICHMANNI* AND *P. DOERINGI*
Dimensions in millimeters

	<i>wichmanni</i>		Trapalcó	<i>doeringi</i>	
	Santa Rosa	Nahuel Niyeu		Santa Rosa	Nahuel Niyeu
Length	15.6	19*	38	35	13.8
Major diameter	8	10**	25.5	27	8.5
Minor diameter	7.8	8.5**	19	23	7.5
Last whorl	12.3	14	30***	***	***
No. of whorls	6½	7	5	4½	5
Sutural angle	23°	26°	10°	15°	
Ratio $\frac{\text{Length}}{\text{Major diameter}}$	1.95	1.9	1.49	1.29	1.72

* Base partially fractured. ** Specimens distorted by pressure. *** Not complete.

Stratigraphy. The fluvial-lacustrine Jahuel Formation was included by earlier authors in the Upper Cretaceous (Maastrichtian) and referred to in the geological literature under various names: "Strata with Dinosaurs," "Lacustrine Senonian" or "Pehuenche Formation." The name Jahuel Formation (Windhausen 1918) is the first available and acceptable term according to the present standards of stratigraphical nomenclature. Recent studies allowed correction of its age, which is Paleocene (mostly Danian and in part Montian. Chronologically correspondent to the Fort Union Formation in North America and Puca Formation of Perú and Bolivia, bearing paleontological affinities with the last). Synchronous with the marine "Rocanean" and "Salamancan" (San Jorge Formation). In the same localities and with our *Physa*, were found *Diplodon bondenbenderi* Doello-Jurado, *Diplodon pehuenchensis* Doello-Jurado, *Valvata windhauseni* Parodiz, several species of *Viviparus* and "*Melania*" *ameghiniana* Doello-Jurado (probably a Pleurocerid) and fish remains (*Ceratodus*). The fresh-water deposits gradually pass to brackish-water environments, sometimes mixed with the marine, and others underlying them, but always above the Senonian in unconformity. George Gaylord Simpson's Rio Chico Formation, bearing the earliest Patagonian mammal

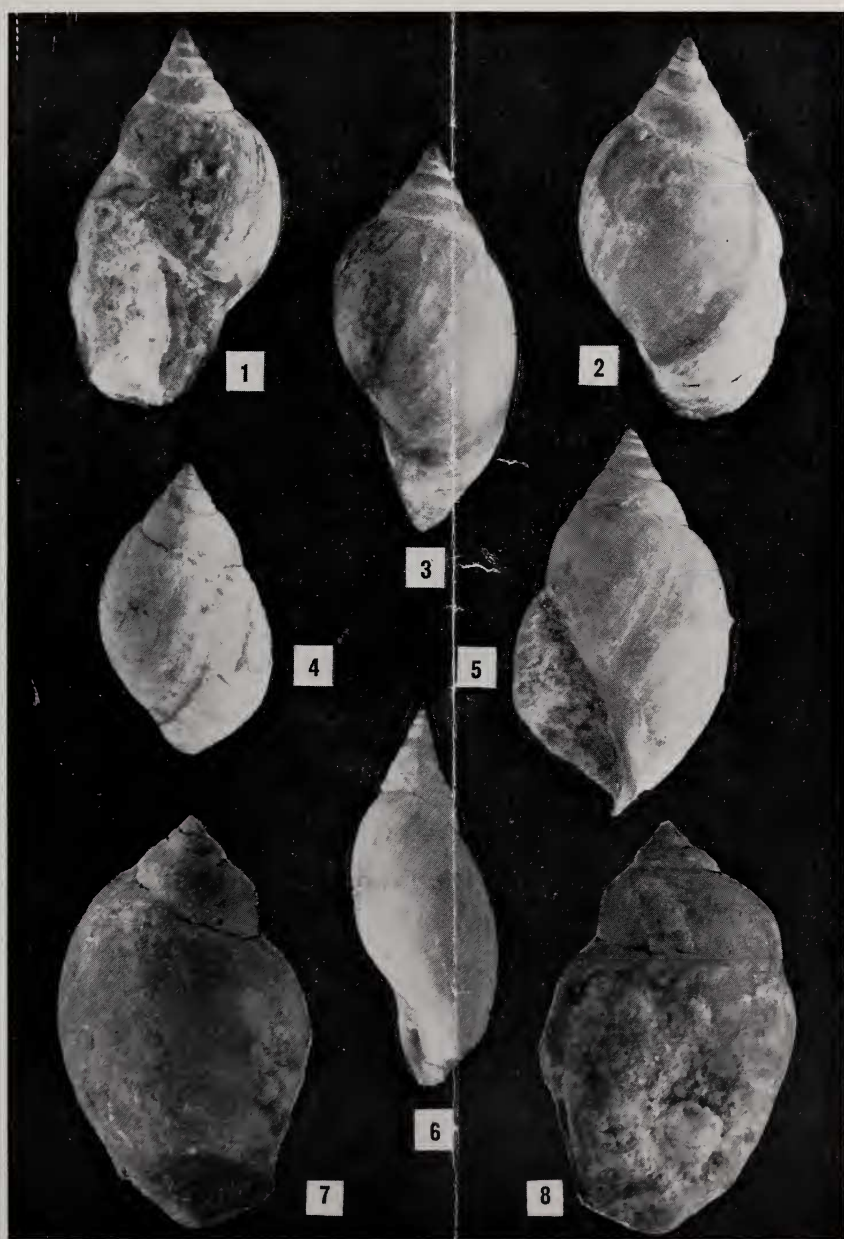


Fig. 1. *Physa wichmanni* and *Physa doeringi*

1—3. *Physa wichmanni*, sp. nov., Santa Rosa, holotype, $\times 2$. 4. *Physa wichmanni*, small specimen from Nahuel Niyeu, enlarged $1/3$. 5—6. *Physa wichmanni* (specimen deformed by diastrophic pressure) Nahuel Niyeu, $\times 2$. 7—8. *Physa doeringi* Doello Jurado, type, Santa Rosa, enlarged $1/4$.

fauna, is a lateral terrestrial equivalent (of the upper section) of Jahuel Formation.

At the end of the Paleocene the *Physa* disappeared from this region, and are present again only in the Pliocene-Pleistocene. It is presumable that the living South American species derived from a modern northern migration, rather than being related to the old tertiary species.